DOOR HINGE FOR A COVERED ARRANGEMENT BETWEEN DOOR POST AND DOOR

CROSS REFERENCE TO RELATED APPLICATIONS

Applicant claims priority under 35 U.S.C. §119 of German Application No. 101 53 778.6, filed Oct. 31, 2001, No. 102 27 638.2, filed Jun. 20, 2002, and No. 202 13 155.6, filed Aug. 28, 2002.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a hidden hinge or door strip for a covered arrangement between the fixed or stationary door post or frame and the wing or leaf of a door. The hinge includes two receiving bodies or mounting bases, hinge brackets, and connectors or inserts. The two mounting bases can be inserted into recesses in the door post and in the narrow side or edge of the door. The hinge brackets interact in pairs and are connected so as to move in pivot fashion about a vertical axis of rotation. The connectors are arranged in the mounting bases and each connector supports the end of a hinge bracket so as to be capable of pivoting about a vertical axis or rotation. The end of the other hinge bracket is guided, capable of movement both longitudinally and in pivot fashion. The door post can be designed as a door lining, block frame or steel frame.

2. The Prior Art

A door post of the structure described above is known from EP 1 063,376 A2. With this known design, the hinge brackets each extend by half over the vertical section of the door hinge. In order to adjust the height of the door wing or leaf, the distance between the hinge brackets can be changed. For this purpose, the axis of rotation between the hinge brackets is designed as an adjusting spindle. The dimensional stability of the known arrangement calls for improvement. The known door hinge is suitable for installation in lightweight door wings, for example, for pieces of furniture, but appears less suitable for doors in residential situations.

A similar design is described in U.S. Pat. No. 4,780,929, specifically for lightweight objects of use, such as skis and musical instruments that can be folded together for easier stowing.

SUMMARY OF THE INVENTION

The invention provides a door hinge for doors in residential rooms or situations that is covered (or hidden) in its installed condition. This hinge is characterized by high dimensional stability and it is suitable for heavy doors. In particular, precise adjustments of the door relative to the door post should be possible.

In accordance with the invention, a hinge with the features described above has one of the two hinge brackets designed in the shape of a fork with two fork arms connecting to a rearward connecting section. This connecting section and the fork arms are mounted on the connectors. The other hinge bracket is inserted in the clear (or free) space between the fork arms. The second hinge bracket includes a middle element mounted in rotational fashion on the fork arms, connected to which at both ends by broader end segments of the bracket. The end segments project upwards and downwards and are mounted on the connectors on the top and bottom sides. The hinge brackets extend in the vertical direction to the same level of height. The upper faces of the two hinge brackets are aligned or flush with each other and the lower faces of the hinge brackets are aligned with each other as well, so that the entire vertical area of the hinge is used to form the jointed connection between the hinge brackets. The hinge brackets, which interact in pairs, are designed as dimensionally stable connecting elements. A contributory factor to the dimensional stability of the arrangement according to the invention is that the hinge brackets in each case extend in each case at both connection ends directly as far as the connectors arranged in the mounting bases. In this way, the mounting can be effected on short journals or lugs which bridge only a small interval gap. With the arrangement of the hinge according to the invention, it is not possible to reach into the door gap from one side during opening and closing of the door. Therefore, the hinge also complies with high safety requirements.

Each of the connectors has a hinge pin or journal, or a journal receptacle or mount, for supporting a hinge bracket in a rotationally movable manner, as well as a guide groove for the linear guidance of the other hinge bracket. The journals which are guided in the guide grooves are usefully provided with plastic sleeves that assure smooth running of the hinge journals in the guides.

According to a preferred embodiment of the invention, the connectors are arranged in the mounting bases so that they can be adjusted both vertically and horizontally. The connectors of the first mounting base are usefully arranged in a guiding recess of the mounting base so that they can be vertically adjustable. The connectors of the second mounting member are orthogonally adjustable to the front face, i.e. they are capable of movement into or out of the mounting base. With the arrangement described, the bearing connectors can be adjusted in at least two axial directions.

With the embodiments described hereinafter, it is also possible to make adjustments at the bearing connectors in three axial directions X, Y and Z. In this context, there are a number of possibilities for the structural design. According to a first embodiment, eccentric adjustment elements are arranged in the first mounting base for the vertical and/or horizontal adjustment of the connectors. Both connectors of the mounting base preferably have an eccentric adjustment element for the horizontal adjustment. The lower connector of the mounting base is additionally supported on an eccentric adjustment element that is rotationally mounted in the mounting base and serves to provide for vertical or height adjustments. The eccentric elements for horizontal adjustment are preferably arranged for rotational movement on a set screw inserted in a threaded drilled hole (or bore) of the mounting base, and engage an eccentric receptacle or mounting of the associated connector. By tightening the set screw, the eccentric element can be secured in any desired adjusted position on the insert. The second mounting base has adjusting spindles that are mounted so as to be rotationally movable on the rear face of the mounting base and extend through threaded holes in the connector. By actuating the setting spindles, which are accessible from the front face, the connectors arranged in the second mounting base perform orthogonal setting movements toward the front face or a fastening flange located on the front face respectively.

In a second, alternative embodiment, the bearing connectors of the first mounting base are arranged so that they can be adjusted only vertically. An adjustable eccentric element may be provided for the vertical adjusting movement. After the desired position has been set, the bearing connectors can be fixed to the mounting base, for example by means of a